diameter of the electrical conductors being between 5 and 50 μm, and the distance between the electrical conductors being smaller than 300 μm.

Amendment to the Claims:

1. (Cancelled)

2. (Currently amended) ~~A catheter as claimed in claim 1~~ The catheter as claimed in claim 7, wherein ~~characterized in that~~ the dielectric material has a relative permittivity ~~which is smaller~~ of less than 2.3~~, notably smaller than 1.5~~.

3. (Currently amended) ~~A catheter as claimed in claim 1~~ The catheter as claimed in claim 7, wherein ~~characterized in that~~ the dielectric material is an aerated synthetic material~~, notably FP301040 or FP301020 as marketed by Good Fellow~~.

4. (Currently amended) ~~A catheter as claimed in claim 1~~ The catheter as claimed in claim 7, wherein ~~characterized in that~~ the two electrical conductors ~~(4)~~ ~~are also arranged to~~ conduct a direct voltage to the voltage supply of a medical instrument arranged on or in the catheter [[(1)]].

5. (Currently amended) ~~A catheter as claimed in claim 1~~ The catheter as claimed in claim 7, ~~characterized in that it includes means for catheter localization during an intervention, notably~~ further including:

at least one active coil ~~(4,5) which is arranged on or in the catheter (1)~~ that facilitates catheter localization during an intervention.

6. (Currently amended) An MR device for forming MR images of an object to be examined, intended especially for intravascular interventional MR imaging, which device includes:

[[-]]a main field magnet system [[(16)]] for generating a homogeneous steady main magnetic ~~field,~~ field;

[[-]]a gradient coil system ~~(17, 18, 19)~~ for generating magnetic gradient ~~fields,~~ fields;

[[-]]an RF coil system [[(14)]] for the exciting resonance in an examination ~~zone,~~ zone;

[[-]]a receiving coil system ~~(14,12)~~ for receiving MR signals from the examination ~~zone,~~ zone;

[[-]]a catheter [[(1)]] **as claimed in claim [[1]]** 7 for introducing a medical instrument into the object [[(10)]] to be examined, ~~notably~~ comprising an active coil [[(4,5)]] which is arranged on or in the catheter [[(1)]] for ~~the purpose of~~ catheter localization, local excitation of the examination zone and/or local reception of MR ~~signals,~~ signals; and

[[-]]a control unit [[(23)]] for controlling the MR device.

7. (New) A catheter that avoids heating of surrounding tissues by having a greater common mode frequency than the magnetic resonance frequency of a magnetic resonance imaging machine, the catheter comprising:

a catheter sleeve;

a hollow guide channel within the catheter sleeve that receives a medical instrument;

two electrical conductors enclosed by a cable sheath, the cable sheath ~~comprises~~ comprising a dielectric material and the two electrical conductors serve for the transmission of RF signals within the catheter sleeve, the dielectric material having a relative permittivity smaller than 4, each of the two electrical conductors having a diameter between 5 and 50 μm, and the distance between the two electrical conductors being approximately 50 μm, such that the catheter avoids heating tissues surrounding the catheter.

8. (New) The catheter as claimed in claim 1, wherein the dielectric material has a relative permittivity less than 1.5.

9. (New) The catheter as claimed in claim 1, wherein the dielectric material has a relative permittivity less than 1.

10. (New) The catheter as claimed in claim 1, wherein the diameter of each of the electrical conductors is approximately 15 μm.

11. (New) The MR device as claimed in claim 6 wherein the two electrical conductors and the dielectric material are configured such that a common mode resonance frequency of the active coil is shifted beyond a frequency of the MR signals.

12. (New) The MR device as claimed in claim 11 further including:

a position sensor coil array disposed adjacent the object for transmitting catheter positioning RF signals to the active coil for determining a position of the electrical conductors and the catheter, the position sensor coil array being in addition to the RF coil system and operating at different frequencies.

13. (New) The MR device as claimed in claim 12, wherein the positioning RF signals are at the common mode resonance frequency.

14. (New) An MR device comprising:

a main field magnetic system which generates a main magnetic field in an examination zone;

a gradient coil system which creates magnetic field gradients across the examination zone;

an RF coil system which transmits RF excitation signals into the examination zone at an imaging resonance frequency to excite resonance in a region of an object in the examination zone;

a position sensor coil array disposed adjacent the examination zone, the position sensor coil array transmits RF positioning signals at a positioning frequency, the positioning frequency being shifted from the imaging resonance frequency;

a catheter configured to be inserted into the object, the catheter including:

an image acquisition coil disposed adjacent a tip of the catheter and tuned to receive imaging resonance signals from resonance excited by the RF coil system,

a localization system extending along the catheter, and tuned to the positioning frequency such that heating adjacent to the catheter is inhibited.

15. (New) The MR device as claimed in claim 14 wherein the localization system includes:

an active coil defined by electrical conductors enclosed in a dielectric sheath, the electrical conductors and the dielectric sheath being configured to have a shortening factor such that a common mode of the active coil is shifted from the imaging resonance frequency.

16. (New) The MR device as claimed in claim 15 wherein the positioning frequency is the common mode frequency.

17. (New) The MR device as claimed in claim 15 wherein the shortening factor is 1.2 or less.

18. (New) The MR device as claimed in claim 15 wherein the dielectric sheath has a relative permittivity (ε_r) smaller than 4.

19. (New) The MR device as claimed in claim 15 wherein the dielectric sheath has a relative permittivity (ε_r) smaller than 2.3.

20. (New) The MR device as claimed in claim 16 wherein the diameter of the electrical conductors is less than 50 μm and greater than 5 μm, and the spacing between the electrical conductors is less than 300 μm.

21. (New) A catheter that minimizes the heating of surrounding tissues by having a greater common mode frequency than a magnetic resonance frequency of an associated magnetic resonance imaging machine, the catheter comprising:

a catheter sleeve made of a flexible material;

a hollow guide channel within the catheter sleeve that receives a medical instrument;

two electrical conductors enclosed by a cable sheath, the cable sheath including a dielectric material and the two electrical conductors serving to transmit RF signals within the catheter sleeve, each of the two electrical conductors having a diameter between 10 to 30 μm and the two electrical conductors configured to minimize a shortening factor of the catheter, and the distance between the two electrical conductors being less than 200 μm, the electrical conductors being configured to have a common mode frequency that is greater than a magnetic resonance excitation frequency of the associated magnetic resonance imaging machine, such that during a magnetic resonance imaging procedure, minimal heating of tissue surrounding the catheter occurs.